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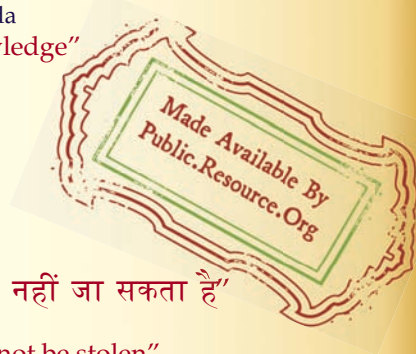
IS 11775 (1986): Recommendations for modular co-ordination: notations and symbols for modular drawings [CED 51: Planning, Housing and pre-fabricated construction]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

RECOMMENDATIONS FOR MODULAR
CO-ORDINATION : NOTATIONS AND SYMBOLS
FOR MODULAR DRAWINGS

UDC 721.013 : 003.62



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INDIAN STANDARDS INSTITUTION
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Indian Standard

RECOMMENDATIONS FOR MODULAR CO-ORDINATION : NOTATIONS AND SYMBOLS FOR MODULAR DRAWINGS

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Indian Standard

RECOMMENDATIONS FOR MODULAR CO-ORDINATION: NOTATIONS AND SYMBOLS FOR MODULAR DRAWINGS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 July 1986, after the draft finalized by the Modular Co-ordination Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 The system devised for planning and designing and also correlating the sizes of building components, based on internationally agreed basic unit of measurement of 1 M (100 mm), is widely known as theory of modular co-ordination. This system has achieved considerable importance in the recent years. In this system, a number of symbols and notations are used in drawings in planning and designing stage which are different from the conventional drawing practices. This standard has been prepared to enable the designers, architects and engineers to get familiar with the drafting conventions for better inference of modular drawings.

0.3 In the preparation of this standard, considerable assistance has been rendered by the National Buildings Organization, New Delhi.

0.4 In the formulation of this standard, due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by deriving assistance from the following:

- a) ISO 129-1985 Technical drawings — Dimensioning — General principles, definitions, methods of execution and special indications. International Organization for Standardization (ISO).
- b) The principles of modular co-ordination in building (*revised*). CIBW 24. The International Modular Group, 1982.
- c) HENRIK NISSEN. *Industrialized building and modular design*. Cement and Concrete Association, London 1972.
- d) INDIA. MINISTRY OF WORKS AND HOUSING. *Development group on prefabrication and modular coordination in building*, 1978.
- e) AJ metric handbook. The Architectural Press, London, 1969.

1. SCOPE

1.1 This standard covers the various notations and symbols used in the modular drawings, along with typical illustrations.

2. NOTATIONS AND SYMBOLS

2.1 Modular Lines

2.1.1 These shall be shown as thin stippled/continuous lines with a circle at one end (*see* Fig. 1).



FIG. 1 MODULAR LINE

2.2 Modular Lines Planning

2.2.1 These shall be shown as thin stippled/continuous lines with circles at both ends (*see* Fig. 2).



FIG. 2 MODULAR LINE (PLANNING)

2.3 Modular Space

2.3.1 The space shall be shown with open arrow heads connected with same thickness of line and arrow. This is mainly for use in textbooks and catalogues (*see* Fig. 3).

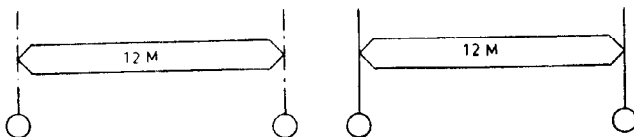


FIG. 3 MODULAR SPACE

2.4 Reference Lines

2.4.1 These lines shall be shown on the drawings as thin stippled/continuous lines marked with a diamond at each end (*see* Fig. 4).

2.4.2 The placing of the reference lines shall be selected in each separate project so that clear and simple setting out with minimum risk of error can be achieved on site by the surveyors.



FIG. 4 REFERENCE LINE

2.5 Location of Reference Lines

2.5.1 The locations of reference lines shall be specified by means of reference measurements.

2.5.2 One of planning modular lines may be selected as reference line. These lines shall be shown on the drawing as thin stippled/continuous lines with diamond at end (see Fig. 5).

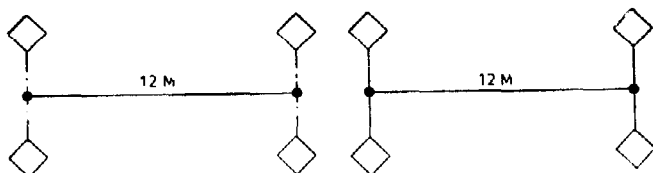


FIG. 5 LOCATION OF REFERENCE LINE

2.6 Reference Planes

2.6.1 These lines shall be shown in the drawing as thin stippled/continuous lines marked with circle inside a diamond at each end (see Fig. 6).

2.6.2 Vertical dimensions shall be set out from levelling planes in accordance with same principles as in the case of horizontal dimensions. Sometimes, levels shall be given in metres to three decimal places (see Fig. 6).

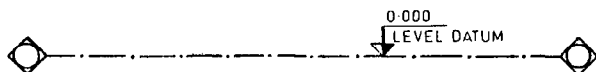


FIG. 6 REFERENCE PLANE

2.7 Centre Lines

2.7.1 Centre lines of walls or columns, beams, etc, shall be shown on drawing as thin stippled/lines with centre line marking at each end (see Fig. 7).

2.7.2 If it falls on the axial planning, then it shall be shown with circles at the end in addition to central line marking.

NOTE — The symbols when inscribed in circles indicate reference system for the building.



FIG. 7 CENTRE LINE OF WALLS, COLUMN AND BEAMS

2.8 Facade Corners of Wall Surfaces

2.8.1 Generally at external envelope, the facade corners of wall surfaces shall be shown on drawing as thin stippled/continuous lines with squares at both ends (see Fig. 8).

NOTE — The symbols when inscribed in squares indicate reference system for the building.

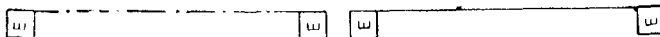


FIG. 8 FACADE CORNERS OF WALL SURFACES
(GENERALLY AT EXTERNAL ENVELOPES)

2.9 Dimension Line Terminations

2.9.1 Dimension line terminations shall be shown as arrowheads drawn as short lines forming barbs at any convenient included angle between 15° and 90° . The arrowhead may be open, closed, or closed and filled in (see Fig. 9).

2.9.2 One style of arrowhead only shall be used on a single drawing. However, where space is too small for an arrowhead, a dot may be substituted.

2.9.3 Arrowhead terminations shall be shown within the limits of the dimension line where space is available. Where space is limited, the arrowhead termination may be shown outside the intended limits of the dimension line that is extended for that purpose.

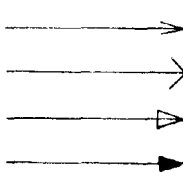


FIG. 9 DIMENSION LINE TERMINATION (ARROWHEADS)

2.10 Running Dimension Lines

2.10.1 The setting out dimensions measured from the reference lines to the various points, lines and surfaces in building shall be specified by means of running dimensions from zero point with open arrowhead. The zero point or the origin indication shall be shown as a small open circle (see Fig. 10).

2.10.2 Figures shall be mainly written on the line of running dimensions, where arrowhead ends.

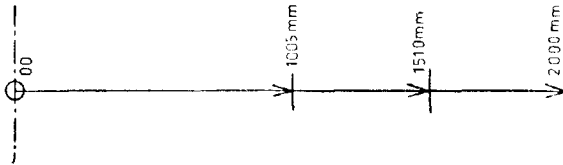


FIG. 10 DIMENSION LINE

2.11 Checking Dimensions

2.11.1 The dimensions shall be shown over continuous thin lines with small oblique stroke clockwise. Generally, these lines represents clear width in plan and heights in vertical section for controlling essential dimensions (see Fig. 11).

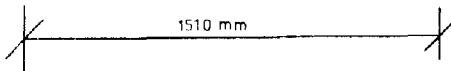


FIG. 11 CHECKING DIMENSION

2.12 Modular Dimensions

2.12.1 The dimensions shall be shown to reference grid with closed or open arrowhead on ends, and values shall be expressed in terms of modules, $n \cdot M$ (see Fig. 12).

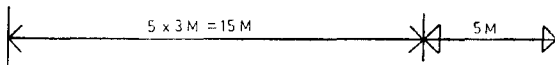


FIG. 12 MODULAR DIMENSION

2.13 Non-Modular Dimensions

2.13.1 Thin full dimensions lines shall be taken to points (not on the modular reference grid) with dots hollow or filled up (see Fig. 13).

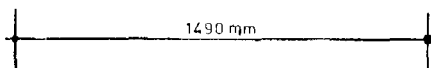


FIG. 13 NON-MODULAR DIMENSION

2.14 Manufacturing Dimensions (Non-Modular)

2.14.1 Thin full dimensions lines shall be distinguished by an open arrowhead or closed arrowhead, closed and filled arrowhead on ends; generally, open arrowhead in practice (see Fig. 14).



FIG. 14 MANUFACTURING DIMENSION (NON-MODULAR)

2.15 Neutral Zones (Modular)

2.15.1 This shall be shown as thin stippled lines with circle at end (see Fig. 15).

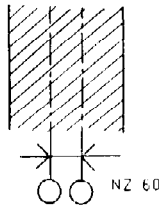


FIG. 15 NEUTRAL ZONE (MODULAR)

2.16 Neutral Zones (Non-Modular)

2.16.1 This shall be shown as thin stippled lines with half circle at ends (see Fig. 16).

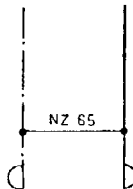


FIG. 16 NEUTRAL ZONE (NON-MODULAR)

2.17 Shaped In-Situ

2.17.1 This shall be shown as thin circle with 'X' marked inside (*see* Fig. 17).



FIG. 17 SHAPED IN-SITU

2.18 Order of Erection

2.18.1 This shall be shown as thin line with square at one end and solid arrow on other end indicating direction (*see* Fig. 18).

2.18.2 Numerical values inscribed in the square shall indicate the sequence of erection.



FIG. 18 ORDER OF ERECTION

2.19 Section

2.19.1 Thin line having both ends tilted at right angles with closed arrowheads and indicated by alphabets or numerals (*see* Fig. 19).

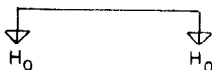


FIG. 19 SECTION

2.20 Identification on Modular/Reference Lines

2.20.1 The position of building elements such as walls, columns or beams shall be identified on reference line inscribing in alphabetic order on horizontal line (*X*-axis) and numerical values on vertical line (*Z*-axis) (*see* Fig. 20).

Examples:

- D1 : Circular column position in plan on reference lines *D* and No. 1.
- C2—D2 : Beam span in between *C* and *D* columns on reference line No. 2.
- C1—C2 : Beam span in between *C*1 and *C*2 columns on reference line *C*.

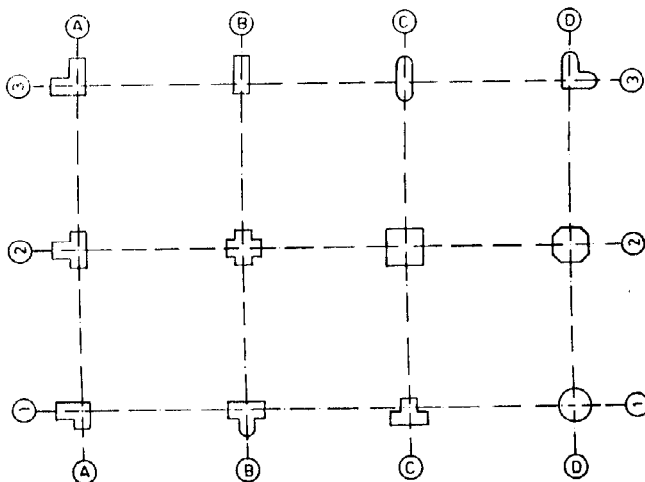


FIG. 20 IDENTIFICATION ON REFERENCE LINE

2.21 Combination of Modular, Working and Checking Dimensions

2.21.1 The symbols for modular, working and checking dimensions can be used together in the same drawing to indicate the working dimensions in relation to modular sizes and also to check correctness of sizes (see Fig. 21).

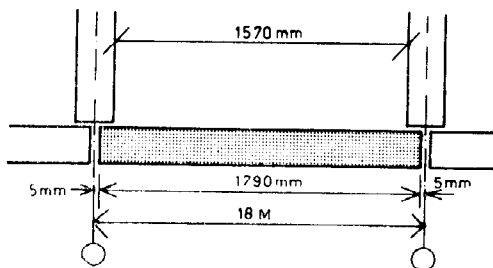


FIG. 21 COMBINATION OF MODULAR, WORKING AND CHECKING DIMENSIONS

2.22 Modular Grid Lines

2.22.1 Modular grids shall be drawn with modular lines.

2.22.2 Modular grids with different line intervals shall be clarified by using a thin line for the smallest interval, thick line for the next larger interval and chain line for modular line in axial position (*see* Fig. 22).

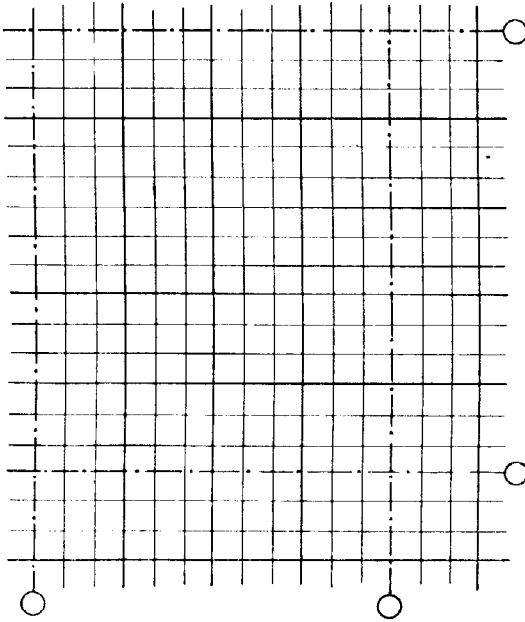


FIG. 22 MODULAR GRID LINES

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous Intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>	<i>Definition</i>
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²